

DIN 16003:2018-04 (E)

Mechanical pressure and temperature gauges - Differential pressure gauges - Dimensions, metrology, requirements and testing

Contents		Page
1	Scope	5
2	Normative references	5
3	Terms and definitions	6
4	Nominal sizes	6
5	Pressure ranges	6
6	Accuracy classes	7
7	Dimensions	8
7.1	General tolerances	8
7.2	Cases and flanges	8
7.3	Pressure connections	9
7.3.1	General	9
7.3.2	Centre-to-centre distances for the pressure connections	9
7.3.3	Gaskets	10
7.4	Type of mounting and position of the connection	10
8	Pressure connections and pressure ranges	13
9	Requirements	13
9.1	Measurement accuracy	13
9.2	Hysteresis	14
9.3	Effect of the static pressure	14
9.4	Temperature effect	14
9.5	Endurance	14
9.5.1	General	14
9.5.2	Steady pressure load	14
9.5.3	Over-pressure (one-sided exposure to pressure)	14
9.5.4	Cyclic pressure	14
9.6	Operating conditions	15
9.6.1	Operating temperature range	15
9.6.2	Temperature range for storage	15
9.6.3	Protection against ingress of water and foreign particles (degree of protection)	15
9.6.4	Effect of mechanical shock	15
9.6.5	Effect of mechanical vibration	15
9.6.6	Leak rate	15
9.6.7	Mounting position	15
9.7	Dials and pointers	15
9.7.1	Scale angle	15
9.7.2	Scale interval	15
9.7.3	Scale marks	15
9.7.4	Scale numbering	15
9.7.5	Pointer dimensions	16
9.7.6	Knife edge pointer	16
9.7.7	Information on the dial	16
9.7.8	Pointer stop	17
9.8	Safety	17

9.8.1	General	17
9.8.2	Pressure gauges with blow-out device	17
9.8.3	Safety pattern gauges	17
9.9	Pressure gauges for oxygen or acetylene	18
9.10	Liquid-filled pressure gauges	18
9.11	Additional design requirements for pressure gauges in legal metrology	18
10	Testing	18
10.1	General	18
10.2	Type approval and production piece tests	19
10.3	Accuracy, hysteresis and effect of static pressure	21
10.3.1	Accuracy and hysteresis	21
10.3.2	Effect of the static pressure	21
10.4	Temperature effect	21
10.5	Endurance	21
10.5.1	General	21
10.5.2	Exposure to static pressure and over-pressure	21
10.5.3	Cyclic pressure	21
10.6	Accuracy after endurance test	21
10.7	Operating temperature range	21
10.8	Temperature range for storage	22
10.9	Protection against ingress of water and foreign particles (degree of protection)	22
10.10	Effects of mechanical shock	22
10.11	Effects of mechanical vibration	22
10.12	Leak test	22
10.13	Mounting position	22
10.14	Safety	22
10.14.1	Pressure gauges with blow-out device	22
10.14.2	Safety pattern gauges	22
11	Packaging for transportation	23
12	Designation	24
Figures	Figure 1 -- Dimensions	8
	Figure 2 -- Pressure connections	10
	Figure 3 -- Example of information on the dial (corresponds to the example in Clause 12)	16
Tables	Table 1 -- Preferred pressure ranges for differential pressure	7
	Table 2 -- Nominal size compared to the accuracy class	7
	Table 3 -- Dimensions	9
	Table 4 -- Preferred centre-to-centre distances	9
	Table 5 -- Preferred type of mounting and position of connections	10
	Table 6 -- Minimum length of pointer	16
	Table 7 -- Type approval and production piece tests	20